An Equivalence of Moore's Paradox and Gödel's Incompleteness Sentence in Two-Valued Algebra of Formal Ethics

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The paper submits surprising results of systematical investigating a formal-ethical aspect of conjoining Wittgenstein's, Moore's, Parmenides', Gödel's, and Łukasiewicz's ideas. A critique of Wittgenstein's critique of the natural language of ethics and of metaphysics results in submitting and elaborating a new paradigm of metaphysics as formal axiology (in particular, formal ethics). In result, the classical metaphysics and ethics of moral rigor are represented as two-valued algebraic systems of metaphysics and formal ethics respectively. By means of this algebraic model, all the well-known scandal-making metaphysical tenets of Parmenides are produced as translations of corresponding algebraic equations from the symbolic language to the natural one. At the level of submitted discrete mathematical model of formal axiology, Parmenides' metaphysical (formal-axiological) concepts "consistency" and "inconsistency," "completeness" and "incompleteness" are compared with Gödel's logic ones. Formal-axiological meanings of the words "consistency," "incompleteness," "being," "nonbeing," "movement," "knowledge," "belief," etc., are considered as moral-evaluation-functions determined by one moral-evaluation-variable. Binary moral-evaluation-functions are studied as well. The functions are precisely defined by tables. Precise definitions of "formal-axiological-equivalence," "formal-axiological-law," and "formal-axiological contradiction" are submitted. Thus, one can either generate or examine formal-axiological equations of algebra of metaphysics by "computing" relevant compositions of moral-value-functions. Using this "moral-value-table-computation-technique," one can arrive to a surprising conclusion that both the notorious sentence of Moore (called "epistemic paradox") and the incompleteness sentence of Gödel are formally-axiologically inconsistent ones: Hence, they are formally-axiologically equivalent. For overcoming the negative psychological effect of such a surprising result, the author has used graphic models explicating the famous Łukasiewicz's statement "Logic is morality of thought and speech."

Keywords: algebra-of-formal-ethics, moral-evaluation-function, formal-ethical-equivalence, knowledge, belief, formal-ethical-contradiction, incompleteness, consistency

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1. Two Worlds, Two Languages, Two Semantics, Two Linguistic Principles of Compositionality, and Two Kinds of Nonsenses (Critical Analyzing Some Well-Known Ideas of Wittgenstein and of Moore from the Viewpoint of an Almost Unknown Two-Valued Algebraic System of Formal Ethics of Moral Rigor[1]

George Moore's and Ludwig Wittgenstein's lives were interconnected: Sometimes they interfered into each other even paradoxically. According to the *apocryphal* stories, not only Moore evaluated Wittgenstein as a philosopher but also Wittgenstein evaluated Moore (as a philosopher). For instance, originally the name "Moore's paradox" was given by Wittgenstein who being extremely shocked by the paradoxical sentence of Moore proclaimed that this paradox was the main discovery of Moore in sphere of philosophy. The present paper begins with a critique of Wittgenstein's attitude to semantics of the natural language of ethics and of metaphysics. And only then I start talking about Moore's notorious sentence allegedly called "logic paradox."

Analyzing the linguistic philosophy of Wittgenstein (1949; 1966; 1993) is implemented by means of a discrete mathematical simulation of the famous principle of logic separation of facts and contingent values. For precise formulating this principle, an artificial language of two-valued algebra of formal ethics is exploited. Being equipped with the (fact-&-contingent-value)-separation principle, I submit systematical separating two worlds, two opposite aspects of natural languages, two formal semantics, two kinds of meanings, two different principles of linguistic compositionality of meanings, and two kinds of nonsenses. The twin worlds, twin aspects of natural languages, twin formal semantics, twin kinds of meanings, and twin kinds of nonsenses are inter-excluding and inter-complementing ones. The first elements of the twins are related to the world of "Tractatus" (Wittgenstein 1949). The second elements of the twins are related to the world of pure values (absolute ones) which world is transcendent to the one of "Tractatus." Beginning of this paper is targeted at explicating and precise tabular defining formal-axiological meanings of words and compound word-combinations of the natural language of morals and of metaphysics. I proclaim that according to a below-submitted (novel), *formal-axiological* principle of linguistic compositionality (of meanings), *formal-axiological meaning of a compound word-combination (of the natural language of morals and of metaphysics) is a composition of such moral-evaluation-functions which are formal-axiological meanings of the parts of the compound word-combination.* The idea of computing formal-axiological meanings of compound word-combinations (of the language of morals and of metaphysics) is exemplified by discussing proper-knowledge, alethic-faith, and alethic-tolerance (Lobovikov 2011a; 2011c; 2014c). In the algebraic system of formal ethics, a precise definition of the formal-ethical-equivalence relation among moral-evaluation-functions is given and formal-ethical equations are generated by means of computing relevant moral-evaluation-tables (Lobovikov 2007a; 2007b; 2014a; 2015b). Now let us start discussing Wittgenstein's ideas.

Quite naturally this paper is to irritate those who are funs of Wittgenstein and know his biography and writings very well. It is so because Wittgenstein used to write and speak about: the world but not (two) worlds; the language but not (two) languages; the nonsense but not (two) kinds of nonsenses. Hence, this paper is devoted not to creating a precise realistic picture of Wittgenstein's philosophy as such but to criticizing his worldview by means of discrete mathematical modeling a formal-ethical aspect of it. According to logic, methodology, and philosophy of science, it is normal that model and original do not coincide: They must be similar but not completely identical; otherwise, model has no heuristic value. Wittgenstein did not undertake

discrete mathematical modeling a formal-ethical aspect of his worldview. He did not undertake a formal-ethical investigation as well. Sometimes he spoke and wrote of ethics but not of formal one. Moreover, he summoned and tried to avoid explicitly talking of (positive) ethics: His talks (and even the lecture) of ethics were *negative*: Positive talking of ethics (and of metaphysics) was labeled as meaningless. One can paradoxically characterize his "Tractatus logico-philosophicus" as a treatise about ethics but the "Tractatus" defines ethics only *negatively* and *implicitly*: It does not contain *manifestly* defining and substantiating *positive* moral values. Wittgenstein believed that *proper* moral values are to be *shown* in human conduct instead of being *spoken* about (as speaking of *proper* moral values has no meaning). Nevertheless, below I undertake investigating possibility of manifest (explicit) formulating a *proper* ethical system (formal-ethical one) of moral evaluations in spite of the well-established and recognized fact of flexibility and relativity of moral assessments of elementary moral actions. That is why funs and connoisseurs of Wittgenstein may be irritated by the below presented formal-ethical discourse. Notwithstanding this expectation, I believe that the below-submitted discourse is worth taking seriously and discussing systematically.

In times of Wittgenstein, the descriptive-indicative meanings of empirical sentences and the formal-logical semantics of the language of science were investigated carefully. On the contrary, the possibility of construction and systematical application of a *formal-axiological* semantics of *evaluative* sentences (of ethics, aesthetics, religion, metaphysics, etc.) was not recognized. (I think that it is not recognized properly even today.) Investigating the *evaluative* (*formal-axiological*) semantics of the natural language was underestimated and even ignored. Probably at the level of sub-consciousness, Wittgenstein perceived this asymmetry situation and therefore instinctively tried to correct it by attracting attention to semantics of the *natural* language which combined both aspects: the *factual* (organized by formal logic) and the *evaluative* (organized by formal axiology) ones.

According to Wittgenstein's "Tractatus," *the world is a totality of facts* (1949). Let the symbol W_1 stand for this world. Values do not belong to the world W_1. As "truth-*values*" are *values* Wittgenstein believes that "Logic is transcendental" (1949). Ethics, aesthetics, and other *axiological* disciplines are *transcendental* as well (Wittgenstein 1949). That language which is isomorphic to the world of "Tractatus" (let the language be called L_1) must be not used in any talks about pure values: Otherwise the talks become meaningless. Using the language L_1, one must abstain from saying something about pure values. Otherwise, using the language L_1 heads to nonsenses.

Nevertheless, as strange as it is, Wittgenstein himself was not perfectly silent with respect to values; he did not absolutely abstain from discussing them at the level of *natural* language. Many facts of his private life (Wittgenstein 1961), philosophical texts, and confessions of the people with whom he communicated demonstrate that he shared quite definite religious and moral values and norms, attempted to follow them systematically in his life (Deangelis 2007; Goldstein 1999; Hacker 1996; Jareño-Alarcón 2001; Malcolm 1993; Wittgenstein 1961; 1966; 1993; Wright 1982). Thus, he really lived in the world of values or at its border-line (let the world of values be called W_2). By definition, the world W_2 is a *totality of values* (and only values). Facts do not belong to W_2. The two worlds W_1 and W_2 exclude and complement each other[2]. Their union makes up the universe of discourse accomplished by means of the *natural* language. That language (L_1), which is isomorphic to the world of "Tractatus," is an important subsystem of the natural language as a system.[3] Another important subsystem of the natural language system is such a language (let it be called L_2), which is isomorphic to the world of *pure* values (W_2). L_2 must be not used in any talks about *pure* facts: Otherwise, the

talks become meaningless. Using only the language L_2, one must abstain from saying something about pure facts as such. Otherwise, the usage of L_2 heads to nonsenses.

There are two different kinds of nonsenses. One kind of them (let us call it N_1) is a result of using L_1 for talking about W_2. Another kind of nonsenses (let us call it N_2) is a result of using L_2 for talking about W_1. The relationship $<W_1, L_1>$ makes up the descriptive-indicative (formal-logical) semantics to be called S_1. The relationship $< W_2, L_2>$ makes up the evaluative (formal-axiological) semantics to be called S_2. As the first is well-studied and the second is almost unknown, hereafter we shall discuss systematically the *formal-axiological semantics dealing with formal-axiological meanings* (let M_2 stand for these meanings) of words and word-combinations of the natural language. (Let, respectively, M_1 stand for the descriptive-indicative meanings of the natural one.)

The present paper is aimed at explicating necessarily universal and immutable laws of the world of *pure (absolute) values*. However, many humans believe that *absolute* laws (strictly universal and perfectly immutable ones) of the world of *pure values* do not exist. The overwhelming majority believe that being of such *formal-axiological laws* is impossible as *values and assessments are necessarily relative* and undergo permanent change.

Many humans believe that any relativism is incompatible with objective knowledge. In particular, they think that if moral evaluations of concrete contents of moral actions (and agents) are *relative to evaluators*, then objective moral laws (=necessarily universal and immutable positive-moral-evaluations of actions) do not exist as they are impossible on principle. However, in my opinion, objective knowledge is compatible with some forms of relativism (Lobovikov 2014a; 2014c; 2015a; 2015b). For instance, it is compatible with a *relative relativism*, i.e., such relativism, which is not an absolute one.

This general statement may be exemplified by the *relativistic* physics. In the special-relativity-theory, it is demonstrated that (if x is a physical body then) mass of x, length of x, time of x are *necessarily relative*: They necessarily depend upon that physical systems, in relation to which they are measured; measuring in relation to different systems gives different results. Nevertheless, there are some physical qualities which invariantly exist in relation to all physical systems. These *invariant* physical qualities are considered as objective laws of the special-relativity-theory. Thus, physics has made a *precedent* to be applied to *analogous* cases. The situation in relativistic ethics is *analogous* to the one in relativistic physics. Therefore, the experience of creating relativistic physics is heuristically important for creating relativistic ethics as a system of objective knowledge of absolute laws of the moral-value-relativity.

The special-relativity-theory is precisely formulated and developed by means of the mathematical language. It is impossible to create and develop this theory by means of the natural language. In formal ethics, the situation is *analogous* to the one in physics. It is impossible to create and develop a theory of relativity of moral evaluations (as a system of absolute laws of their relativity) at the level of natural language. For departing from the old-fashioned absolute-moral-relativism to precise mathematical formulations of absolute formal-ethical laws of moral-evaluation-relativity (Lobovikov 2014a; 2014c; 2015a; 2015b), it is necessary to construct an artificial language of formal ethics for investigating a mathematical model of the system of moral evaluations of actions and agents. Hereafter let us start constructing the artificial language and the mathematical model.

Below the possibility of mathematical representation of moral activity is demonstrated by the elementary mathematical ethics—two-valued algebra of good and evil (Lobovikov 1999; 2007a; 2009a; 2011a; 2014a;

2015b). This algebra is based upon the set D of either moral acts or moral agents (persons). By definition, moral acts are such and only such operations which are either-good-or-bad ones in the moral meaning of the words "good" and "bad." By definition, moral agents (persons) are such and only such agents (persons) which are either-good-or-bad ones in the moral meaning of the words "good" and "bad." Algebraic operations, defined on the set D, are moral-evaluation-functions. Moral-evaluation-variables of these functions take their values from the set $\{g, b\}$. Here the symbols "g" and "b" stand for the moral values (of elements of D) "good" and "bad" respectively. The functions take their values from the same set. The symbols "x" and "y" stand for moral-forms of acts-or-agents. Elementary moral-forms deprived of their contents are independent moral-evaluation-variables. Compound moral-forms deprived of their contents are moral-evaluation-functions determined by these variables.

Let symbol Σ stand for the *moral evaluator*, i.e., that person, in relation to which all evaluations are generated. In the moral-evaluation-relativity theory, Σ is a variable: Changing values of the variable Σ can result in changing moral evaluations of concrete acts and agents. However, if a value of the variable Σ is fixed, then moral evaluations of concrete acts and agents are definite.

DEFINITION DF-1 (of *invariant law* of moral-relativity theory): in two-valued algebra of formal ethics, a moral-evaluation-function is called *formally-ethically (or invariantly) good* one, if and only if it acquires the moral value *g (good)* under any possible combination of moral values of its variables.

DEFINITION DF-2 (of *formal-ethical contradiction*): in two-valued algebra of formal ethics, a moral-evaluation-function is called *formally-ethically (or invariantly) bad* one, if and only if it acquires the moral value *b (bad)* under any possible combination of moral values of its variables.

DEFINITION DF-3 (of *formal-ethical-equivalence*-relation): in two-valued algebra of formal ethics, moral-evaluation-functions x and y are *formally-ethically equivalent* (this is represented by the symbol "$x=+=y$"), if and only if they acquire identical moral values (from the set $\{g, b\}$) under any possible combination of moral values of the variables. In the natural language, the equivalence relation "$x=+=y$" is represented by the ambiguous word-homonym "is" (Lobovikov 2007b; 2015b). Its ambiguity and homonymy was noticed and recognized by many prominent logicians and philosophers including Wittgenstein (1949, 55). For adequately understanding the present paper, here it is worthy of note that "is" as the logical connective, and "is" as a linguistic means for representing the relation "$x=+=y$" in the natural language, have significantly different meanings. Substituting them for each other is strictly forbidden. Violating this prohibition produces linguistic illusions of logic contradictions with facts.

Taking into an account the above-given definitions, one can make an important discovery: the *invariant laws* of moral-relativity theory do not depend upon changes of the moral evaluator Σ. If x is a formal-ethical law, then x is morally good in relation to every moral evaluator Σ.

Moreover, in the moral-relativity theory under review, *formal-ethical contradictions* of complex moral conduct also do not depend upon changes of the moral evaluator Σ. If x is a formal-ethical contradiction, then x is morally bad in relation to every moral evaluator Σ.

Finally, if there is the above-defined *formal-ethical equivalence*-relation between moral-evaluation-functions x and y, then the functions x and y are *formally-ethically equivalent* ones in relation to every moral evaluator Σ.

Hence, in spite of the flexibility and relativity of elementary moral evaluations, there are *absolute invariants* (immutable universal laws) of the moral relativity (Lobovikov 2014a; 2014c). Thus, the moral relativity is not absolute but relative one.

To exemplify the above-said, let us discuss moral-evaluation-functions "*proper* knowledge," "*alethic* (true) faith," "doubt," "assumption," "toleration," and "tolerance" in two-valued algebraic system of formal ethics. To begin discussing these functions, let us introduce the symbols standing for them in the artificial language of this algebra and then precisely define formal-axiological meanings of the introduced symbols by means of corresponding tables.

The glossary for the Table 1: The symbol $K^E xy$ stands for the moral-evaluation-function "*x's knowing* (what, whom) *y*" (in the *proper-episteme* meaning of "*knowing*"). $A^D xy$—the evaluation-function "*x's assuming y (as a proper-episteme).*" $I^D xy$—"*x's not-assuming y (as a proper-episteme).*" $N^E xy$—"*x's not-knowing* (what, whom) *y.*" $D^X xy$—"*y's being a doxa* of/for *x.*" $D^M xy$—"*y's having a determined epistemic quality* for *x.*" The moral-evaluation-functional sense of these operations is defined by the Table 1.

Table 1
"Proper-Episteme" and "Assumption"

x	y	$K^E xy$	$A^D xy$	$I^D xy$	$N^E xy$	$D^X xy$	$D^M xy$
g	g	b	g	b	g	g	b
g	b	b	g	b	g	g	b
b	g	g	g	b	b	b	g
b	b	b	b	g	g	b	g

The glossary for the Table 2: The symbol $F^A xy$ stands for moral-evaluation-function "*x's alethic* (true) *faith (not-revisable belief)* in (what, whom) *y.*" $D^N xy$—"*x's alethic doubt (not-removable one)* in not-*y.*" $F^N xy$—"*x's true faith (not-revisable belief)* in not-*y.*" $D^T xy$—"*x's alethic doubt (not-removable one)* in *y.*" $S^C xy$—"*x's alethic* (true) *skepticism concerning y*, i.e., *x's alethic doubt in both: y and not-y.*" $N^S xy$—"*nonbeing of x's alethic skepticism concerning y*," i.e., "*either x's alethic faith* in *y*," or "x's *alethic faith* in not-*y.*" The moral-evaluation-functional sense of these operations is defined by the Table 2.

Table 2
"Alethic Faith" and "Alethic Doubt"

x	y	$F^A xy$	$D^N xy$	$F^N xy$	$D^T xy$	$S^C xy$	$N^S xy$
g	g	b	g	b	g	g	b
g	b	b	g	b	g	g	b
b	g	g	g	b	b	b	g
b	b	b	b	g	g	b	g

The glossary for the Table 3: The symbol $N^N xy$ stands for "*x's alethic* (true) *non-toleration of not-y*," or "*x's not-standing* (what, whom) not-*y.*" $T^O xy$—"*x's alethic toleration of y*," or "*x's standing y.*" $N^O xy$—"*x's alethic non-toleration of y.*" $T^N xy$—"*x's alethic toleration of not-y.*" $T^C xy$—"*x's alethic tolerance to y*, i.e., *x's standing both: y and not-y.*" $N^T xy$—"*nonbeing of x's alethic tolerance to y*," i.e., "*either x's alethic non-toleration of y*," or "*x's alethic non-toleration of not-y.*" These operations are defined by the Table 3.

Table 3

"Toleration" and "Alethic Tolerance"

x	y	$N^N xy$	$T^O xy$	$N^O xy$	$T^N xy$	$T^C xy$	$N^T xy$
g	g	b	g	b	g	g	b
g	b	b	g	b	g	g	b
b	g	g	g	b	b	b	g
b	b	b	b	g	g	b	g

Using the above-given definitions, one can demonstrate the following equations.

(1) $K^E xy=+=B^F xy$: proper knowledge is alethic faith.

(2) $B^F xy=+=K^E xy$: alethic faith is proper knowledge.

(3) $A^E xy=+=D^N xy$: assuming means doubting-in-the-contrary.

(4) $N^A xy=+=B^N xy$: not-assuming is alethic faith-in-the-contrary.

(5) $N^K xy=+=D^T xy$: non-being of proper knowledge means doubt, i.e., non-being of alethic faith.

(6) $D^E xy=+=S^C xy$: proper knowledge-indifference is equivalent to alethic faith-indifference.

(7) $R^E xy=+=B^P xy$: non-being of proper knowledge-indifference is equivalent to non-being of alethic faith-indifference.

According to these equations, *the knowledge-modalities and the corresponding faith-ones are formally-ethically equivalent* to each other. This outcome of mathematical modeling is surprising for those who are used to the opposition of "knowledge" and "faith," hence, they could estimate equations (1)-(7) as paradoxes. However, there are only *illusions* of paradoxes caused by the ambiguity of the natural language. For destroying such illusions of paradoxes in algebra of formal ethics, there is a *formal principle of logic autonomy of corresponding facts and contingent values,* which is precisely formulated as follows.

Let *ßx* stand for an act of informing (true or false affirming) that *x* takes place in reality. Concerning the relationship between "=+=" and "logic equivalence," the principle in question may be formulated as the following rule (A&B):

(A) From the truth of *x=+=y*, it does not follow logically that logic equivalence of *ßx* and *ßy* is true;

(B) From the truth of logic equivalence of *ßx* and *ßy*, it does not follow logically that *x=+=y* is true.

The *illusion* of paradox concerning equations (1)-(7) is destroyed by (A&B). This illusion is a result of not-recognized "jumps" from formal-ethical equivalences of *empirical (contingent)* moral evaluations to formal-logical equivalences of facts (and back from the formal-logical equivalences of facts to the formal-ethical equivalences of *empirical* moral evaluations). In algebra of formal ethics, such bridging the gap between facts and *contingent* moral evaluations is strictly forbidden by (A&B), which is an explication of important particular case of *the general principle of mutual formal-logic autonomy of corresponding factual propositions and empirical moral evaluations.*[4] The rule (A&B) can be universalized in the following way. Let us call this generalization "(Y&Z);"

(Y) From *x=+=y*, it does not logically follow that (*ßx©ßy*);

(Z) From (*ßx©ßy*), it does not logically follow that *x=+=y*.

Here the symbol "©" stands for any element of the set of all *binary* formal logic operations.

As to the *unary* operations of algebra of formal ethics, the general principle of logic autonomy of mutually corresponding empirical-values and facts can be precisely formulated as the following rule (U&Q):

(U) From *ß@x*, it does not logically follow that *ßx*;

(Q) From βx, it does not logically follow that $\beta @ x$.

Here the symbol "@" stands for any element of the set of all *unary* operations of algebra of formal ethics. Such an explication and formulation of the principle of formal logic autonomy of facts and contingent values was submitted by me in (2007b; 2015b).

Now taking into an account the above-said, let us consider the famous linguistic principle of semantic compositionality of meanings of compound word-combinations (Horwich 1997; Pagin 2003; Pelletier 1994; 2001; 2003; Werning, Hunzen, and Machery 2012). According to this compositionality principle, the semantic meaning of a complex phrase is a function determined by meanings of parts of the complex phrase. If meanings of parts of the complex phrase are functions determined by meanings of their parts, then the semantic meaning of the complex phrase under consideration is a *composition* of the functions. Here the terms "function" and "composition of functions" are used in their proper mathematical meanings.

According to algebra of metaphysics considered as algebra of formal axiology (Lobovikov 2007b), in particular as algebra of formal ethics, semantic meanings of words and word-combinations in the natural language of ethics and of metaphysics are nothing but evaluation-functions determined by a finite number of evaluation-variables (Lobovikov 2007a; 2007b; 2009a; 2009a; 2011d; 2014a; 2015a; 2015b). Semantic meanings of *compound* word-combinations in the natural language of ethics and of metaphysics are nothing but *compositions of* the evaluation-*functions* which are formal-axiological meanings of the parts of the *compound* word-combinations under consideration. (Here the terms "function" and "composition of functions" are used in their proper mathematical meanings as well.) It is easy to see that in the language L_2, the linguistic principle of semantic compositionality of meanings of compound word-combinations is a very specific one. Let this specific formal-axiological compositionality-principle be called $C\text{-}P_2$. Hence, respectively, the linguistic principle of semantic compositionality of meanings of compound word-combinations in the language L_1 is to be called $C\text{-}P_1$. The functions and compositions of functions implied by the two compositionality principles ($C\text{-}P_1$ and $C\text{-}P_2$) are significantly different ones. How does the principle $C\text{-}P_2$ work? For showing a concrete example of its functioning, let us consider George Moore's epistemic paradox (Almeida 2001; Cholbi 2009; Green and Williams 2007; 2011; Heal 1994; Lobovikov 2014b). To do this, we need some additional moral-evaluation-functions to be introduced and defined by the below glossaries and tables.

The glossary for the Table 4: The symbol K_2xy stands for the binary moral-evaluation-function "*uniting* (conjoining) *x and y in a whole*." (Here the index 2 indicates that the indexed letter stands for a *binary* operation.) T_2xy—the moral-evaluation-function "destruction, termination of *x by y*." P_2xy—the evaluation-function "preservation, conservation of *x by y*." O_2xy—"*y*'s offensive, assault (aggression) against *x*." D_2xy—"defense of *x by y*." V_2xy—"*y*'s violence over (whom) *x*." J_2xy—"*y*'s nonviolence over (whom) *x*." U_2xy—"*strong* (excluding) *moral choice of the best between x and y* (implying realization of the chosen and non-realization of the not-chosen)." A_2xy—"*weak (not-excluding) moral choice* (and realization) *of the best among such moral* alternatives which can be made up by means of *x and y*" (here possibility of choice and realization of K_2xy is *not excluded*). W_2xy—"*uniting non-realization of x and non-realization of y*." E_2xy—"*moral identification of x and y*," or "morally equalizing *x and y*." C_2xy—"realizing *y in response to* realization of *x*." X_2xy—"*y*'s contradiction to (whom) *x*."

Table 4

Binary Moral Operations in Two-Valued Algebra of Formal Ethics

x	y	K_2xy	T_2xy	P_2xy	O_2xy	D_2xy	V_2xy	J_2xy	U_2xy	A_2xy	W_2xy	E_2xy	C_2xy	X_2xy
g	g	g	b	g	b	g	b	g	b	g	b	g	g	b
g	b	b	b	g	b	g	b	g	g	g	b	b	b	b
b	g	b	g	b	g	b	g	b	g	g	b	b	g	g
b	b	b	b	g	b	g	b	g	b	b	g	g	g	b

The glossary for the Table 5: The symbol *Nx* stands for the unary moral-evaluation-function "*nonbeing of x.*" *Bx*—the moral-evaluation-function "*being of x.*" *Gx*—"*(monotheistic) God of x.*" *Fx*—"*faith in x.*" *Lx*—"*alethic necessity of x.*" *Mx*—"*movement* (change) *of x.*" *Yx*—"*alethic accidentalness of x.*" *Ox*—"*oneness (unity) of x,*" or "*x's being one.*" *Px*—"*x's* being *permitted.*" *Ix*—"*deontic indifference to* (what) *x.*" *Zx*—"*alethic tolerance to* (what) *x.*" *Sx*—"*x's self-destruction, self-termination* (suicide).*" *Cx*—"*x's self-preservation, self-conservation, self-defense.*" *Jx*—"*x's consistency,*" or "*nonbeing of contradiction in x.*" *Dx*—"*x's divisibility, or dividedness, many-ness x.*" *Xx*—"*x's formal-axiological self-contradiction.*" *Wx*—"*x's inconsistency or being of contradiction in x.*" *Vx*—"*void of x.*" *Ex*—"*completeness of x.*" *Ux*—"*x's incompleteness.*"

Table 5

Unary Moral Operations in Two-Valued Algebra of Formal Ethics

x	Nx	Bx	Gx	Fx	Lx	Mx	Yx	Ox	Px	Ix	Zx	Sx	Cx	Jx	Dx	Xx	Wx	Vx	Ex	Ux
g	b	g	g	g	g	b	b	g	g	b	b	b	g	g	b	b	b	b	g	b
b	g	b	g	b	b	g	b	b	b	b	b	b	g	b	g	b	g	g	b	g

Using the above-given definitions, one can substantiate the following equation of two-valued algebra of formal ethics.

(8) $K_2K^ExyNB^Fxy=+=$b.

According to DF-2 and DF-3, this equation means that Moore's paradox is a *formal-ethical self-contradiction of x's activity* (Lobovikov 2014b; 2014c). This is interesting in a wide philosophical context, but here I concentrate attention mainly on the fact that substantiating the equation (8) necessarily exploits the above-discussed *principle of compositionality of formal-axiological meanings* (C-P$_2$).

Moreover, demonstrations of the following formal-ethical equations also imply using the *formal-axiological compositionality principle* (C-P$_2$).

(9) $C_2PSxPy=+=$g: if suicide is permitted, then everything is permitted (Wittgenstein 1961).

(10) $C_2NPdNPSx=+=$g: if some *d* is not permitted, then suicide is not permitted (Wittgenstein 1961).

(11) $C_2NGxPy=+=$g: if God does not exist, then everything is permitted (attributed to Dostoyevsky[5]).

(12) $C_2NPdBGx=+=$g: if some *d* is not permitted, then God exists (the contraposition of the equation (11).

(13) $NFGx=+=Sx$: nonbeing of trust in God of x is x's self-destruction, self-termination (suicide).

(14) $FNGx=+=Xx=+=$b: faith in nonbeing of God of x is x's formal-axiological self-contradiction.

The conjunction of the premise "some *d* is not permitted" with the above equation (12) (obtained by the contraposition of the equation (11) logically implies the corollary "God exists" (by *modus ponens*). Thus, the discrete mathematical models of moral and metaphysical principles considered in this paper are interesting not only from abstract-philosophy-theory viewpoints, but also from the ones of theology, ethics,

jurisprudence, criminology, psychology, psychiatry. The practice aimed at preventing suicides unites all the mentioned disciplines in one activity and necessarily links them with the abstract fundamental investigation undertaken in this paper.

2. Some Parmenides's and Zeno's Paradoxical Sentences and Gödel's Hope-Breaking Ones from the Viewpoint of Two-Valued Algebraic System of Metaphysics as Formal Ethics

In my publications submitting and investigating the hypothesis that, in its essence, metaphysics is nothing but formal axiology in general (and formal ethics in particular), the following formal-axiological equations of the above-defined algebra are demonstrated and discussed (2007b).

(15) $Bx=+=Bx$: being is being, or "being does exist" (Parmenides).

(16) $Nx=+=Nx$: nonbeing is nonbeing, or "nonbeing does not exist" (Parmenides).

(17) $Bx=+=Ox$: being is oneness, or "one does exist" (Parmenides).

(18) $Dx=+=Nx$: many-ness is nonbeing, or "many-ness does not exist" (Parmenides).

(19) $Mx=+=Nx$: movement is nonbeing, or "movement does not exist" (Parmenides).

(20) $Mx=+=Wx$: x's movement is being of contradiction in x (Parmenides, Zeno).

(21) $Bx=+=Jx$: x's being is nonbeing of contradiction in x (Parmenides, Zeno).

(22) $Bx=+=NMx$: x's being is nonbeing of x's movement (Parmenides, Zeno).

(23) $Vx=+=Nx$: void is nonbeing or "void does not exist."

(24) $Bx=+=NVx$: being is nonbeing of void.

(25) $Ux=+=Vx$: incompleteness is void.

(26) $Bx=+=Ex=+=NUx$: being is completeness or "being is complete."

(27) $Bx=+=Jx$: being is consistency (non-contradictoriness), or "being is consistent."

This equation list makes up a discrete mathematical model of the Eleates' metaphysics (Guthrie 1990). From the above equations, it is easy to derive the following three ones.

(28) $Jx=+=Ex=+=NUx$: consistency is equivalent to completeness!

(29) $Ux=+=Wx=+=NJx$: incompleteness is equivalent to inconsistency!

(30) $Bx=+=K_2JxEx$: being is conjoining consistency and completeness!

These equations are very important in relation to proving the main statement of this paper because it is easy to transform them into the following one.

(31) $K_2JxUx=+=K_2JxNJx=+=K_2UxNUx=+=Xx=+=b$: conjoining x's consistency with x's incompleteness is formally-axiologically inconsistent (self-contradictory) activity!

Consequently, if the consistent formal arithmetic theory S (investigated by K. Gödel) is a value of the variable x, then S is *formally-axiologically* inconsistent! One can be irritated by this discourse but the demonstration is logical; hence, the only option for rejecting the irritating corollary is rejecting the premises (initial definitions). But this does not undermine the paper's main statement which is *conditional* one: Rejecting some of the initial definitions makes the conditional statement true by making its antecedent false.

Nevertheless, feeling of logic-contradiction between the above equations (28)-(30) and Gödel's incompleteness theorems is strong and arises quite naturally. Therefore, here it is indispensable to make the following remark. The logic-contradiction impression is nothing but an *illusion* naturally produced by

the ambiguity of natural language, namely, by the above-mentioned homonymy of the words "is" and "equivalence."

The above-given formulation of the principle of formal-logic independence of corresponding facts and contingent values is an effective remedy for illusions of this type. However, above the indicated principle of formal-logic independence of corresponding contingent moral evaluations and factual propositions is formulated too abstractly: No instantiation is submitted. Therefore, now I am to instantiate the mentioned principle and then to demonstrate how it works concerning the illusion of contradiction we are puzzled by. First of all, it is psychologically necessary and pedagogically reasonable to show an example of applying the principle under instantiation to a concrete situation of life of laymen equipped with common sense.

Let $(t<+20°C)$ stand for the moral-action-form "x's body-temperature is made less than 20 degrees above zero centigrade." And let $(t>+60°C)$ stand for the moral-action-form "x's body-temperature is made more than 60 degrees above zero centigrade." If the concrete circumstances of the situation are quite determined and the variables x and Σ are fixed, then the moral-action-forms $(t<+20°C)$ and $(t>+60°C)$ become moral actions which are either good or bad from the viewpoint of the evaluator Σ. In the two-valued algebra of formal ethics of moral rigor, for any x and Σ, it is true that $((t<+20°C)=+=(t>+60°C))$. This formal-axiological equation deals with empirical moral-legal *values* exclusively: It has no formal-logic-entailment relations to corresponding statements of facts. According to the above formulation of the principle under exemplification, $\beta(t<+20°C)$ stands for the fact-fixing-proposition "x's body-temperature is made less than 20 degrees above zero centigrade," and $\beta(t>+60°C)$ stands for the fact-fixing-proposition "x's body-temperature is made more than 60 degrees above zero centigrade." Being propositions about facts, $\beta(t<+20°C)$ and $\beta(t>+60°C)$ are either true or false ones. Hence, it is quite natural to connect these two fact-fixing-propositions by the logic operation "$\leftrightarrow$" (logic equivalence). The proposition $(\beta(t<+20°C)\leftrightarrow\beta(t>+60°C))$ is nothing but logic connection of facts: It has nothing to do with moral values. According to the above rule, if one implements the following "logic inference," the one commits the blunder, as there is no logic-consequence-relation between the "premise" and the "corollary."

$$\frac{((t<+20°C)=+=(t>+60°C))}{\beta(t<+20°C)\leftrightarrow\beta(t>+60°C))}$$

Here committing the jump from the alleged premise to the alleged corollary is strictly forbidden by the rule A. Violating this rule can result in a logic catastrophe: deriving evidently false purely factual "conclusion" from obviously true empirical-moral-evaluation "premise." Also the rule strictly prohibits the converse jump from the evident falsity of $(\beta(t<+20°C)\leftrightarrow\beta(t>+60°C))$ to falsity of $((t<+20°C)=+=(t>+60°C))$ by "*modus tollens*" as there is no logic entailment relation between the two substantially different equivalences. Thus, the abstract rule is exemplified at the level of grass-roots.

Now let us go to the more abstract (metaphysical) situation of the Eleates' "paradoxes." Let us consider the above-given formal-axiological equation (19) $Mx=+=Nx$: Movement is nonbeing or "movement does not exist." Intentionally violating the rule under instantiation, one can construct the following invalid argument underlying the "paradox" of Parmenides and Zeno.

$Mx=+=Nx$: x's movement is (formally-axiologically equivalent to) x's nonbeing.

$(\beta(Mx)\leftrightarrow\beta(Nx))$: affirming fact of x's movement is (formally-logically equivalent to) affirming fact of x's nonbeing.

At the level of natural language, the invalidity of this argument is hidden by the above-mentioned homonymy of the word "is." In the "premise," the word "is" stands for the *axiological equivalence* "$=+=$"

but in the "corollary," the word "is" stands for the *logical equivalence* "↔." The "premise" $Mx=+=Nx$ is true but the "corollary" $(\beta(Mx)\leftrightarrow\beta(Nx))$ is false as from the experience viewpoint it is an absurd that "*x* moves" if and only if "*x* does not exist." Thus, humans were puzzled by the Eleates' "paradoxes." But using the "*modus tollens*" here for constructing the logic inconsistency under discussion is irrelevant as there is no logical consequence relation between the "premise" and the "corollary." Thus, the abstract rule under consideration is instantiated again (now at a more sophisticated level).

However, the above two quite impressive exemplifications are far away from the paper theme. Therefore, below such an instantiation is given which is just about the above-mentioned problem of impression of "logical contradiction" between Gödel's incompleteness theorems and formal-axiological equations (28)-(30) proved in two-valued algebra of metaphysics. Let the above true formal-axiological equations (28)-(29) are used as allegedly premises of the following invalid arguments (forbidden by the rule A).

$$Jx=+=NUx \qquad\qquad Ux=+=NJx$$
$$\overline{(\beta(Jx)\leftrightarrow\beta(NUx))} \qquad\qquad \overline{(\beta(Ux)\leftrightarrow\beta(NJx))}$$

Here at the level of natural language, the defectiveness of the arguments is quite masked by the ambiguity of the word-homonym "equivalence." In the "premises," the word "equivalence" stands for the *axiological equivalence* "=+=" but in the "corollaries," the word "equivalence" stands for the *logic equivalence* "↔." The "premise" $Jx=+=NUx$ is true according to the above-formulated algebra of metaphysics (as formal axiology) but the "corollary" $(\beta(Jx)\leftrightarrow\beta(NUx))$ is false according to the theorems of Gödel. However, using the "*modus tollens*" here for constructing the logic contradiction is irrelevant as there is no logical-consequence relation between the "premise" and the "corollary." Thus, the abstract rule under consideration is instantiated in relation to the concrete theme of this paper.

3. A Meta-theoretical Interpretation of the Logical Square and Hexagon. A Metaphysical Dogma "Crashed" by the Hope-Breaking Gödel's Incompleteness Theorems

The traditional logic exploits the square of opposition of the A, E, I, O (Béziau and Read 2014; Correia 2009; 2012). In XX century, A. Sesmat (1951) and R. Blanché (1957; 1966; 1969) had generalized the intellectual (heuristic and didactic) role of the square substantially by transforming it into a hexagon of opposition interpreted as a graphic model of universal conceptual scheme. After Sesmat (1951) and Blanché (1957; 1966; 1969), this promising trend in logic investigations was creatively developed by J.-Y. Béziau (2012a; 2012b). To the present time within the framework of this scientific-work-direction, a lot of interesting examples of graphic modeling knowledge systems (and thus organizing them) by means of logical hexagons were either discovered or invented (Sesmat 1951; Blanché 1957; 1966; 1969; Kalinowski 1972; Béziau 2012a; 2012b; Dufatanye 2012; Moretti 2012).

In addition to the rich collection of nontraditional interpretations of the logical square and hexagon, I have submitted a substantially new interpretation of the ones (Lobovikov 2015c): They are considered as *meta-theoretical* ones organizing logical interconnections among the meta-theoretic concepts "inconsistent," "consistent," "incomplete," "complete," "consistent and complete," and "if consistent, then incomplete" in a system of meta-theoretical knowledge.

Let the symbol "t" stand for a theory based on the *classical* logic exclusively. Let the symbol INCONS (t) stand for the meta-theoretic statement "t is logically inconsistent." The symbol CONS (t) stands for the

meta-theoretic statement "t is logically consistent." COMP (t) stands for the statement "t is logically (semantically) complete." INCOMP (t) stands for the statement "t is logically (semantically) incomplete." (CONS (t)⊃INCOMP (t)) stands for the statement "if t is consistent, then t is incomplete." (COMP (t) & CONS (t)) stands for the statement "t is consistent and complete." In this part of the paper, I submit a new and somewhat nontrivial thesis that if only *classical* logic is meant, then the above mentioned meta-theoretic statements make up the below-given logical square and hexagon. Here the condition of *classicalness* of logic is important one as in some non-classical logics, for instance, in *paraconsistent* ones (Béziau 1999; Costa 1974; Costa, Krause, and Bueno 2007) the inconsistency does not logically imply the completeness. Nevertheless for any theories organized by the *classical* logic, the below square and hexagon are valid.
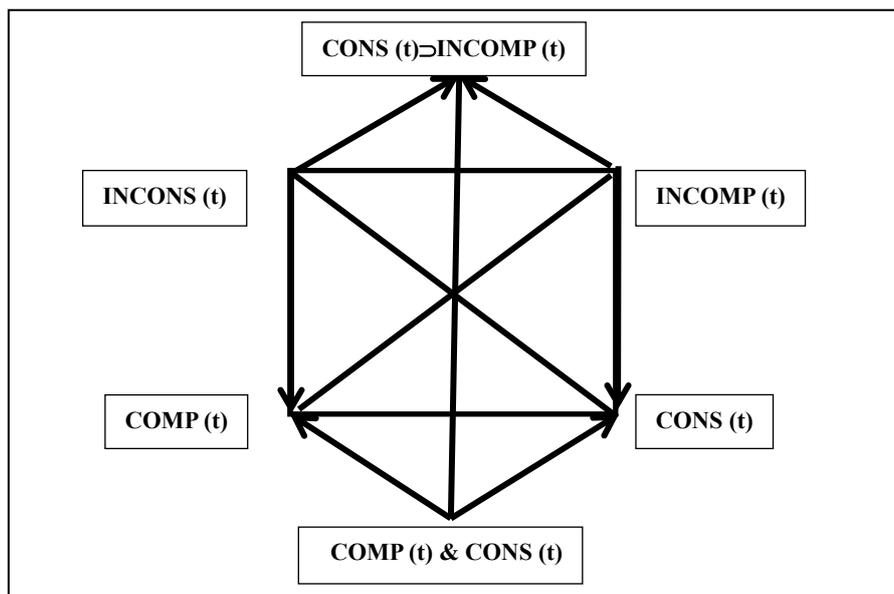

Fig. 1. The logical square-and-hexagon of the meta-theoretical statements.[6]

In this graphic model, the relations of logical contradiction (contradictory-ness) are represented by the lines crossing the square. The relations of logical subordination (logical consequence) are represented in the picture by the arrows. The relation of logical contrariety (contrary-ness) is represented by the upper horizontal line of the square. The relation of logical sub-contrariety (sub-contrary-ness) is represented by the lower horizontal line of the square.

This square-and-hexagon graphically represents the knowledge of several famous meta-theorems as a logically organized system. According to this graphic model, the first-order-predicate-logic and the propositional one belong to the set of theories to be placed at the bottom (lower corner) of the hexagon. On the contrary, the formal arithmetic theory S (investigated by Gödel) belongs to the set of theories to be placed at the top (upper corner) of the hexagon.

Obviously, in the times of Aristotle, Leibniz, and Cant, it was impossible to create the above-presented meta-theoretical interpretation of the square-and-hexagon of opposition as the empirical basis for such creation did not exist in their times: The relevant meta-theorems had not been proved yet. The set of proofs of meta-theorems necessary and sufficient for making up the empirical basis of the above-submitted meta-theoretical interpretation of the square-and-hexagon appeared only in XX century.

In my opinion, the above logical hexagon may be interpreted as the one of opposition of a-priori theories and empirical (a-posteriori) ones. In this hypothetic interpretation, a-priori theories are defined as such and only such ones which are consistent and (semantically) complete. Graphically speaking, a-priori theories are located at the bottom (lower corner) of the above hexagon. In this respect, a-posteriori theories are defined as such and only such ones which are either inconsistent or (semantically) incomplete. Graphically speaking, a-posteriori theories are located at the top (upper corner) of the above hexagon. For instance, if the hexagon is interpreted as the one of opposition of a-priori and a-posteriori theories, then the first-order-predicate-logic theory and the propositional one are to be placed at the lower corner as they are consistent and complete and hence belong to the set of a-priori theories. In this interpretation of the hexagon, the formal arithmetic theory S (investigated by Gödel) is to be placed at the upper corner as, according to Gödel's incompleteness theorems, if S is logically consistent, then S is semantically incomplete. Hence, according to the definition of the notion "a-posteriori theory" accepted in the hypothetic interpretation of hexagon, the theory S belongs to the set of a-posteriori ones.

In my paper (2011d) devoted to discrete mathematical modeling the formal ethics of thought and speech, the epistemic modalities "*provability of* (what) *y* for (what, whom) *x*" and "*truth or truthfulness of* (what) *y* for (what, whom) *x*" (or "*y*'s *being true* for *x*") are precisely defined and systematically investigated as *moral-evaluation-functions determined by moral-evaluation-variables*. In two-valued algebra of formal ethics of moral rigor, these epistemic-modality-functions are precisely defined by the following tables.

The glossary for the Table 6: The symbol $P^R xy$ stands for the moral-evaluation-function "*provability* (existence of proof) *of* (what) *y* for/to (what, whom) *x*." $N^R xy$ stands for the moral-evaluation-function "*irrefutability of* (what) *y* for/to (what, whom) *x*." $R^F xy$—"*refutability* (existence of refutation) *of* (what) *y* for/to (what, whom) *x*." $N^P xy$—"*improvability* (nonbeing of proof) *of* (what) *y* for/to (what, whom) *x*." $I^P xy$—"*nonbeing of proof and nonbeing of refutation of* (what) *y* for/to (what, whom) *x*" or "*improvability and irrefutability of* (what) *y* for/to (what, whom) *x*." $D^P xy$—"*either being of proof or being of refutation of* (what) *y* for/to (what, whom) *x*" or "*either provability or refutability of* (what) *y* for/to (what, whom) *x*." The mentioned moral-evaluation-functions are defined by the Table 6.

Table 6
"Proving" and "Refuting" as Moral Operations

x	y	$P^R xy$	$N^R xy$	$R^F xy$	$N^P xy$	$I^P xy$	$D^P xy$
g	g	b	g	b	g	g	b
g	b	b	g	b	g	g	b
b	g	g	g	b	b	b	g
b	b	b	b	g	g	b	g

The glossary for the Table 7: The symbol $T^R xy$ stands for the moral-value-function "*y* is a *truth for* (what, whom) *x*" or "*y* is *true for x*." The symbol $N^F xy$ stands for "*y* is *not-false for x*." $F^A xy$—"*y* is *false for x*." $N^T xy$—"*y* is *not-true for x*" or "*y* is *not a truth for x*." $I^T xy$—"*y*'s *truth-value-indifference*, or truth-value-*neutrality*, or truth-value-*indefiniteness for* (what, whom) *x*." $D^T xy$—"*y*'s *truth-value-non-indifference*, or truth-value-non-*neutrality*, or truth-value-*definiteness for x*." These moral-value-functions are defined by the Table 7.

Table 7

"Truth" and "Lie" as Moral-Value-Functions

x	y	$T^R xy$	$N^F xy$	$F^A xy$	$N^T xy$	$I^T xy$	$D^T xy$
g	g	b	g	b	g	g	b
g	b	b	g	b	g	g	b
b	g	g	g	b	b	b	g
b	b	b	b	g	g	b	g

Using the above-given definitions one can substantiate the following equation of two-valued algebra of formal ethics.

(32) $K_2 T^R xy N P^R xy = + = b$.

According to the above definitions *DF-2* and *DF-3*, this formal-ethical equation means that the first incompleteness theorem of Gödel constructs a *formal-ethical contradiction*, i.e., an *inconsistency of moral form of activity* (Lobovikov 2011b; 2011d; 2014b; 2014c). Being produced in result of consistent deriving logic consequences from a set of precisely formulated nontrivial definitions the equation (32) is very interesting and important one in a wide philosophical context.

I think that the below-submitted equations (33)-(34) make up a model of the rationalists' ideal episteme (a-priori knowledge) which is perfect, i.e., consistent and complete. Hence, knowledge of propositional logic is a-priori one. But the incompleteness theorems of Gödel have demonstrated that the arithmetic theory does not belong to a-priori knowledge system: The theory in question belongs to a-posteriori one.

(33) $T^R xy = + = P^R xy = + = K_2 T^R xy P^R xy$.

(34) $E_2 T^R xy P^R xy = + = g$.[7]

During the long time, there was a popular belief and hope that arithmetic knowledge as a whole is a-priori one. Moreover, among mathematicians and rationalist-minded philosophers, there was a faith and hope that mathematical knowledge as a whole is a-priori one (mathematics is not a science). There was a project to prove the a-priori nature of mathematics as a whole by complete reducing the whole system of mathematics to the arithmetic knowledge (allegedly taken for a-priori one). Gödel's incompleteness theorems crashed that project. But the crash of that project has not refuted the formal-axiological equivalences (33)-(34).

In relation to the above discussion of compositionality, it is worth attracting one's attention to the fact that computing the equations (32), (33), (34) necessarily exploits the above-discussed *principle of compositionality of formal-axiological meanings* (C-P$_2$). In relation to the above-formulated principle of mutual formal logic autonomy of corresponding facts and contingent values, here it is quite relevant to submit the following discourse exemplifying the logic-autonomy principle by applying it to the specific subject-matter directly related to the main theme of this paper.

In the two-valued algebra of metaphysics as formal ethics of moral rigor, the formal-axiological equation $T^R xy = + = P^R xy$ deals with *moral-value*-functions exclusively: It has no formal-logic-entailment relations to corresponding statements of *facts*. According to the above-given abstract formulation of the principle of logic independence between corresponding facts and accidental values, it is relevant to recognize the following. $\beta T^R xy$ stands for the *fact*-fixing-proposition "*y is true for x*," and $\beta P^R xy$ stands for the *fact*-fixing-proposition "*y is provable for x*." Being propositions (about facts), $\beta T^R xy$ and $\beta P^R xy$ are either true or false ones. Hence, it is quite natural to connect these two fact-fixing-propositions by the binary logic operation "↔" (logic equivalence). The compound proposition $\beta T^R xy ↔ \beta P^R xy$ is nothing but a logic connection of *facts*: It has

nothing to do with moral *values*. According to the above-formulated rule of logic independence of corresponding facts and values, if one implements the following "logic inference," the one commits the blunder, as there is no logic consequence relation between the "premise" and the "corollary."

$$\frac{T^R xy = + = P^R xy}{\beta T^R xy \leftrightarrow \beta P^R xy}$$

Here committing the jump from the alleged premise to the alleged corollary is strictly forbidden by the above-formulated rule A. Violating this rule can result in a psychologically impressive illusion of logic catastrophe: deriving evidently false *purely factual* "conclusion" from obviously true *purely evaluative* "premise." Also the rule A strictly prohibits the converse jump from the *factual* falsity of $\beta T^R xy \leftrightarrow \beta P^R xy$ to falsity of $T^R xy = + = P^R xy$ by "*modus tollens*" as there is no logic entailment relation between the two substantially different equivalences. Thus, the abstract rule under consideration is exemplified in immediate relation to the main theme of this paper once more.

Also taking into an account the paper title, it is worth looking at the following invalid argument.

$$\frac{K_2 K^E xy NB^F xy = + = K_2 T^R xy NP^R xy}{\beta K_2 K^E xy NB^F xy \leftrightarrow \beta K_2 T^R xy NP^R xy}$$

I think that being irritated by the "corollary" of this "argument" is a psychologically normal reaction of a normal person. Content analysis of fact-fixing propositions $\beta K_2 K^E xy NB^F xy$ and $\beta K_2 T^R xy NP^R xy$ shows that their contents are not connected; their logic equivalence is false. But moving from falsity of the "corollary" to falsity of the "premise" (by "*modus tollens*") is forbidden by the rule A. Thus, the formal-axiological equivalence $K_2 K^E xy NB^F xy = + = K_2 T^R xy NP^R xy$ is protected from the possible alleged critique based on invalid argument.

4. Łukasiewicz's Idea of Logic as Morality of Thought and Speech. A Precise Indication of the Status of Formal-Axiological Equivalence between Moore's and Gödel's "Paradoxical" Sentences within the Two-Valued Algebraic System of Formal Ethics Generalizing the Classical Algebraic System of Formal Logic

According to Jan Łukasiewicz; "Logic is morality of thought and speech" (Woleński 2014). Let us consider logic consequences of accepting this philosophical hypothesis. Ethics deals with morality of any human activity (speaking-and-thinking is a particular case of acting). Consequently, moral-form-of-activity (deprived of its specific contents) is a generalization of logic-form of thought-and-speech (deprived of its specific contents). Consequently, formal ethics is a generalization of formal logic. Hence, there is such a subsystem of system of formal ethics, which completely coincides with the classical two-valued system of formal logic. This basic subsystem of formal ethics is nothing but two-valued system of formal ethics of moral rigor of speaking-and-thinking. The two-valued formal ethics of moral rigor does exist although, evidently, it is neither realistic nor humanistic one. However, here it is important to recognize that the mentioned two-valued formal ethics of moral rigor is a much more universal doctrine than the classical logic. Let us consider the propositional classical logic as an example. Propositions are particular cases of moral actions. Truth-values (true and false) of propositions are particular cases of moral-values (good and bad) of actions, respectively. Hence, the classical two-valued algebraic system of formal logic is a particular case of two-valued algebraic system of formal ethics. Details (definitions, explanations, exemplifications, etc.) concerning this algebraic system of formal ethics can be found in (Lobovikov 1999; 2007b; 2009a; 2009b; 2011a; 2011c; 2014a; 2014c;

2015b). Here I would like to consider such consequences of the hypothesis in question which are immediately related to the paper theme.

According to the above-given definition *DF-1*: In two-valued algebra of formal ethics, a moral-evaluation-function (moral activity form) is called *formally-ethically (or invariantly) good* one (or a *law* of algebra of formal ethics), if and only if it acquires the moral value *g (good)* under any possible combination of moral values of its variables.

Consequently, the relationship between notions "formal-logical-law of thought-and-speech" and "formal-ethical-law of human activity in general" can be represented by the following Fig. 2.
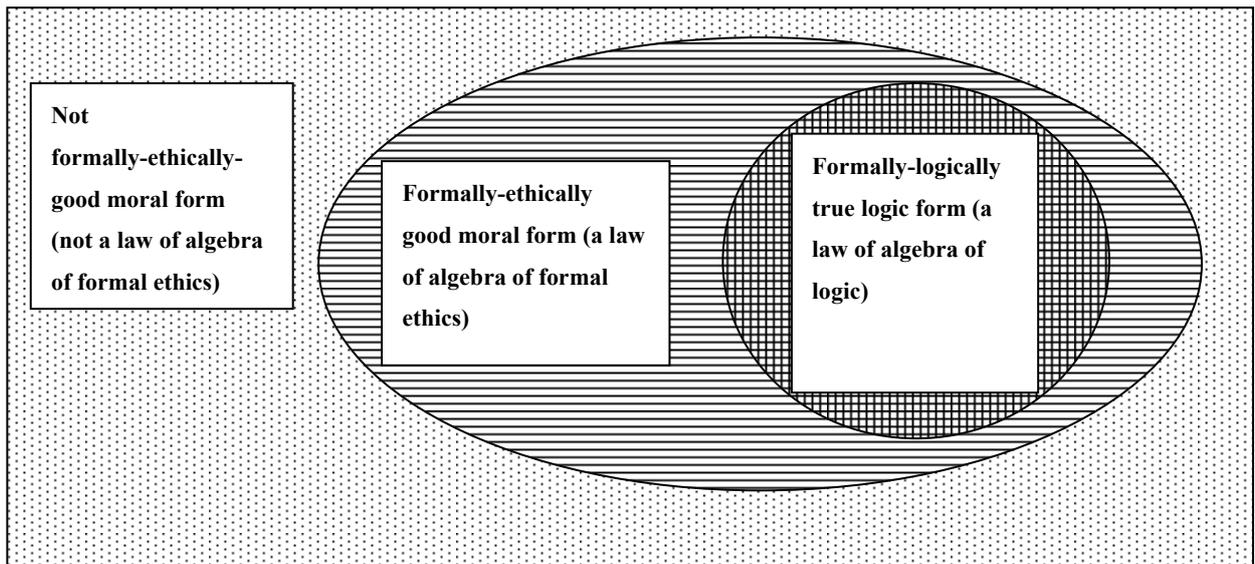

Fig. 2. Relationship between formal-axiological law and formal-logical one.

According to the above-given definition *DF-2* (of *formal-ethical contradiction*): In two-valued algebra of formal ethics, a moral-evaluation-function is called *formally-ethically inconsistent (or formally-ethically bad)* one, if and only if it acquires the moral value *b (bad)* under any possible combination of moral values of its variables.

Consequently, the relationship between formal-logical-inconsistency of thought-and-speech and formal-ethical-inconsistency of activity in general can be represented by the following Fig. 3.

According to the above-given definition *DF-3* (of *formal-ethical-equivalence*-relation): In two-valued algebraic system of formal ethics, moral-evaluation-functions (moral-forms of human activity) *Ω* and *Ψ* are *formally-ethically equivalent* (this is represented by the symbol "*Ψ=+=Ω*"), if and only if they acquire identical moral values (from the set {*g (good), b (bad)*}) under any possible combination of moral values of their moral-evaluation-variables.

Consequently, the relationship between notions "formal-logical-equivalence of logic-forms of thought-and-speech" and "formal-ethical-equivalence of moral-forms of human activity (any one)" can be represented by the following Fig. 4.
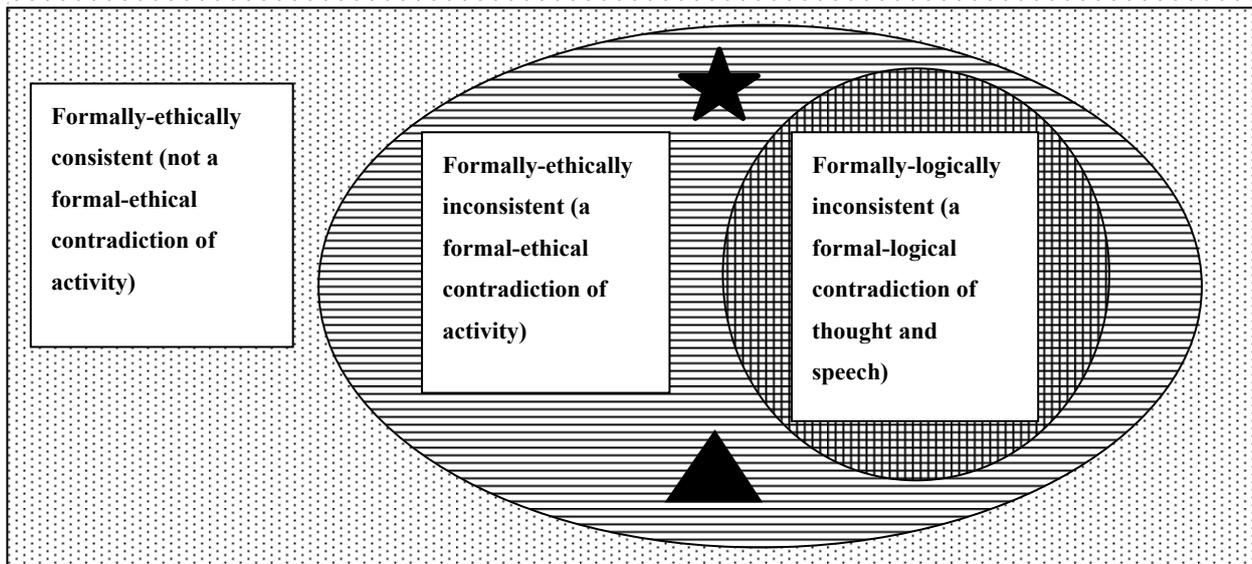
Fig. 3. Status of the sentences of Moore and Gödel.
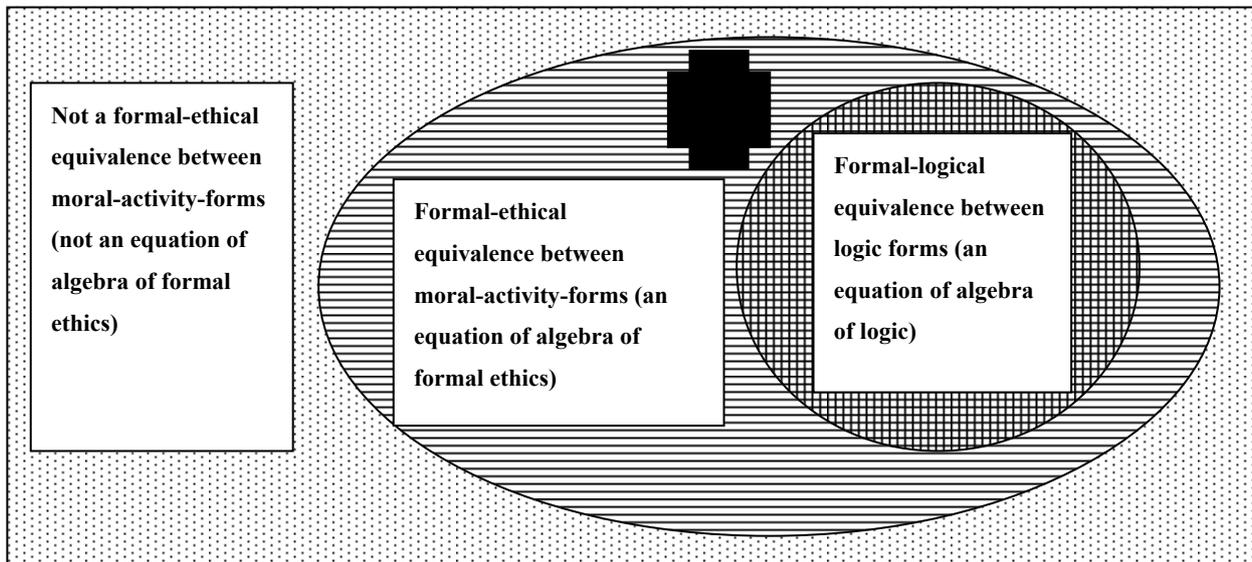
Fig. 4. Status of the formal-ethical equivalence-relation between the sentences of Moore and Gödel.

In the natural language, the *formal-ethical equivalence* relation "$x=+=y$" is represented by the ambiguous word-homonym "is." The ambiguity and homonymy of "is" was noticed and recognized by many prominent logicians and philosophers. For adequate understanding the present paper, here it is worthy of note that "is" as the well-known logic connective and "is" as a linguistic means for representing the relation "$x=+=y$" in the natural language, have significantly different meanings. Hence, substituting them for each other is strictly forbidden. Violating this prohibition produces linguistic illusions of logic contradictions with facts. Using the word "is" at the intersection between formal logic and formal ethics one must be careful.

Now being equipped with the above-submitted formal-ethical apparatus, let us discuss the formal-ethical equivalence-relation between the incompleteness theorem of Gödel and the epistemic paradox of Moore. In this

paper, I mean the first Gödel's theorem of incompleteness of formal arithmetic theory. In purely-mathematical-logic relation, the theorem is not questioned: It is recognized as a perfectly proved one. The epistemic paradox of Moore is recognized as a formally-logically consistent sentence containing no formal-logical self-contradiction of thought and speech. However, in this paper for the first time in world literature, the two notorious sentences under comparison are manifestly evaluated and strictly demonstrated as formally-ethically equivalent ones within the framework of the two-valued algebra of formal ethics of moral rigor. The novel and psychologically surprising statement of such a formal-ethical-equivalence is a logical consequence of conjunction of the two papers (Lobovikov 2011d; 2014b). Another option: the statement logically follows from the conjunction of papers (Lobovikov 2009b; 2011b; 2014b). Also the conjunction of papers (Lobovikov 2009b; 2011b; 2014c) logically entails the formal-ethical-equivalence of the two sentences under consideration. Nevertheless, hitherto their formal-ethical-equivalence was neither recognized nor manifestly formulated: The last step (move) towards the discovery was not done. In the present paper, the surprising equivalence is discovered, recognized, substantiated, and submitted for the first time.

Using graphic means, the main new idea of this paper is modeled by the above Figs. 3 and 4 in which the black triangle stands for the sentence of Moore, the black star stands for the sentence of Gödel, and the black cross stands for the formal-ethical equivalence-relation between the sentences of Moore and Gödel. Both sentences are formally-logically consistent but they belong to one and the same class of formally-ethically inconsistent moral-activity-forms. Hence, there is a *formal-ethical-equivalence* relation between the two sentences under comparison.

Notes

1. Beginning of the paper is my compilation of some of my works (Lobovikov 2009b; 2011b; 2011d; 2014a; 2014b; 2014c; 2015b). Placing this compilation at the beginning of the present paper is indispensable for adequate understanding such a significantly new nontrivial result submitted in this paper which is still not published elsewhere. The paper's main novel statement of the surprising fact of the hitherto unknown nontrivial formal equivalence mentioned in the title is still not published. (It was orally presented by me in English at the II Colombian Congress of Logic, Epistemology and Philosophy of Science. February 8-10, 2012, Universidad de los Andes, Bogotá, Colombia, in my paper titled "From Logicism to 'Ethicism' in the Philosophy of Mathematics: From the Formal Logic of Thinking to the Formal Ethics of Acting," but, unfortunately, there was no printed handbook of the conference materials. Only the program was available. The present paper is a further developed complete text of that oral presentation in Bogotá.)

2. This model follows Wittgenstein's worldview and develops it further: Hence, the model under discussion here is the one of Wittgenstein's opinion. In my own opinion, a *contingent* coincidence between fact and *contingent* (factual) value is possible: Only *necessary* (absolute) moral values are excluded from the set of facts.

3. According to Leibniz, truths are either *necessary* or *factual (accidental)* ones. As by Wittgenstein's definition, the world W_1 is a *totality of facts*; the necessary and the impossible states of affairs do not exist in W_1. Hence, in the language L_1 (which is isomorphic to the world W_1) the sentences about either-necessary-or-impossible states of affairs (i.e., either-tautologies-or-logic-contradictions, respectively) are meaningless. This note successfully explains Wittgenstein's enigmatic treating tautologies as semantic nonsenses. However, if within the scope of classical two-valued logic one possessing commonsense defines semantic nonsenses as neither true nor false statements, then tautologies are not semantic nonsenses. That is why very often the one possessing commonsense is puzzled by Wittgenstein's surprising consideration of tautologies as semantic nonsenses.

4. In spite of the dominating belief that the (fact-&-accidental-value)-separation principle under explication is necessarily universal one, I think that it is not so. I believe that the relevant-applicability domain of the separation principle is necessarily restricted: Its complement is not empty one. In my opinion, the principle's domain is necessarily reduced to the realm of facts and factual (accidental) evaluations. Necessarily positive and necessarily negative moral evaluations do not belong to this realm. Hence, in my opinion, it is irrelevant to apply the separation principle to the relationship between tautological statements of necessarily universal being (absolute being) and ones of necessarily universal moral value (absolute goodness). Such irrelevant applying is committing a blunder heading to hard confusions in worldview discussions.

5. Part 4, Book 11, Chapter 4 ("A Hymn and a Secret") of the novel (Dostoyevsky 2011).

6. I presented this picture at the international conference (2015c).

7. Originally the equations (33)-(34) were published in my papers (2009b; 2009c).

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